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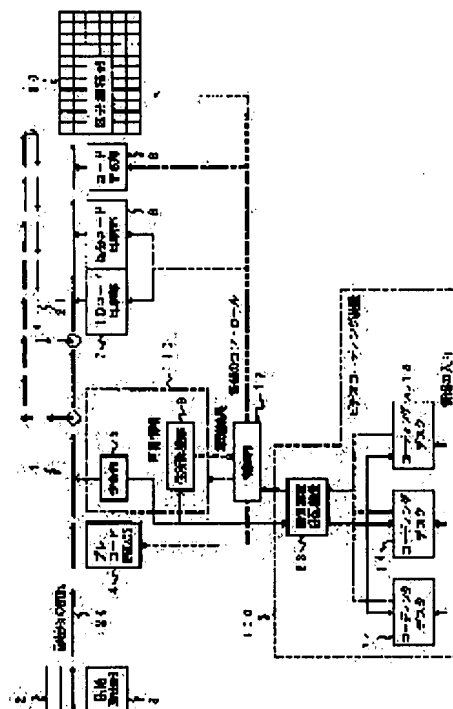
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(54) ADDRESS RECOGNIZER, POSTAL ITEMS SORTER AND POSTAL ITEMS HANDLING SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To improve the efficiency of handling of even the postal items having plural delivery address names within the same addresses.

SOLUTION: If there are plural delivery address names, such as apartment house names and addressee names, within the same addresses, this information is recognized by an address recognizer 110 and is printed as codes converted to delivery order by a code printing section 6 and, therefore, the finer final delivery sorting than heretofore is executable and the burden of the manual input work is lessened. Even in case of a failure in the recognition of the address information on a postal items sorter 1 side, the similar handling is made possible by inputting the apartment house names and addressee names by a video encoder 100.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the address recognition equipment which recognizes the address information on mail, the mail partition equipment which performs the partition of mail, and a mail processing system.

[0002]

[Description of the Prior Art] In the conventional mail processing system, the address information on mail is recognized and it has mail partition equipment which performs the partition.

[0003] Moreover, mail partition equipment reads the supply extraction section and the address information on mail perform supply of mail, and drawing, and the partition accumulation partition [mail] accumulation sections based on the code read station and the code information read the code information printed by the code printing section which codes the result which has recognized in the recognition section recognize, the conveyance section which convey mail to each part of equipment, and the recognition section, and prints on mail, and this code printing section etc. are consisted of.

[0004] Moreover, in a mail processing system, it may have the video coding equipment to input according the address information which runs short to the mail which has not recognized address information with said mail partition equipment to an operator.

[0005]

[Problem(s) to be Solved by the Invention] However, although the read address information or the information inputted with video coding equipment was coded and printed in the above-mentioned conventional mail processing system, a reading object is to the address display number indicated on mail, and had become that to which the range of coding also applied to it correspondingly. Therefore, when destination names, such as a residence of two or more affairs, were in the same address, all had become the same delivery sequence. That is, to the last, even if it mechanized even route assembly, since delivery sequence was not decided when the destination name of two or more affairs is in the same address, the delivery sequence had not been located in a line in order of delivery according to the address display number etc. For this reason, rearrangement by the help was needed again, processing of mail took time and effort, and there was a problem that effectiveness was bad.

[0006] Then, this invention is made in view of the above-mentioned situation, and aims at offering the address recognition equipment, the mail partition equipment, and the mail processing system which can attain the increase in efficiency of processing also to the mail which has the destination name of two or more affairs in the same address.

[0007]

[Means for Solving the Problem] In the address recognition equipment which recognizes the partition data by which this invention is needed for the partition of mail from the address information containing the address and a destination name, and presents said partition with them in order to solve the above-mentioned technical problem A discernment means to discriminate the address and a destination name from the address information read with a reading means to read the address information on said mail, and this reading means, An address storage means by which the address of the mail of a jurisdiction office and the information on a destination name were memorized at least, A delivery sequence information storage means by which the delivery sequence information based on the destination name of

mail was stored, A decision means to judge whether two or more destination names exist in the same address of the mail identified with said discernment means based on the information memorized by said address storage means, When it is judged that two or more destination names exist with this decision means, it is characterized by having the partition data output means with which gives the delivery sequence information stored in said delivery sequence information storage means, outputs said partition data, and said partition is presented.

[0008] By such configuration, when it judges whether two or more destination names exist in the same address based on the information memorized by address storage means by which the information on the address and a destination name was memorized and it is judged that two or more destination names exist, said address recognition equipment gives the delivery sequence information based on the destination name of mail, and outputs partition data.

[0009] Moreover, in order to solve the above-mentioned technical problem, this invention is set to the mail partition equipment which classifies mail. It has a destination name recognition means to recognize the destination name of said mail when two or more destination names exist in the same address as an address recognition means to recognize even the address among the address information on said mail. When two or more destination names exist, the partition data which give delivery sequence information and are needed for a partition are outputted. An address recognition means to output only the address information recognized by said address recognition means when two or more destination names do not exist as partition data, A partition code printing means to code the partition data outputted from this address recognition means, and to print in said mail, A partition code reading means to read the partition code printed by this partition code printing means, It is characterized by having a partition accumulation means by which classifies said mail into a predetermined accumulation field, and it is accumulated, based on the partition code read by this partition code reading means. Furthermore, said address recognition means is characterized by the ability to constitute that it seems that only the address information instead of partition data may be outputted.

[0010] Said mail partition equipment gives delivery sequence information, when two or more destination names exist, by such configuration, it outputs partition data, the partition data inputted by this outputted partition data are coded, and it prints in mail, and further, based on this printed partition code, mail is classified into a predetermined accumulation field and it is accumulated.

[0011] Moreover, the mail partition equipment with which this invention performs the partition for the address information on mail with ***** in order to solve the above-mentioned technical problem, In the mail processing system which has video coding equipment with which gives partition data to the mail which has not recognized address information in this mail partition equipment, and the partition processing by said mail partition equipment is presented An image information are recording means to accumulate the image information of the mail in which said video coding equipment has the address information which has not been recognized in said mail partition equipment, It has an information input means to input the partition data which include delivery sequence information when two or more destination names are in the same address based on the image information accumulated by this image information are recording means. An address recognition means by which said mail partition equipment recognizes even the address among the address information on said mail, When it has a destination name recognition means to recognize the destination name of said mail when two or more destination names exist in the same address, and two or more destination names exist An address recognition means to output the address information recognized with said address recognition means and the destination name recognition means, and to output only the address information recognized by said address recognition means when two or more destination names do not exist as a recognition result, A delivery sequence information storage means by which the delivery sequence information based on the address information on mail was stored, Only in the case of the address information the recognition result outputted from said address recognition means has been recognized to be by said address recognition means, partition data are created based on this. When the destination name is contained in said outputted recognition result A partition data output means to give the delivery sequence information stored in said delivery sequence information storage means, and to create and output partition data, A partition code printing means to code the partition data inputted by the partition data outputted from this partition data output means, or said video coding equipment, and to print in said mail, It is characterized by having a partition code reading means to read the partition code printed by this partition code printing means, and a

partition accumulation means by which classify said mail into a predetermined accumulation field, and it is accumulated based on the partition code read by this partition code reading means.

[0012] By such configuration, said video coding equipment inputs the information which runs short including delivery sequence information, when two or more destination names exist to the mail which has not recognized address information with said mail partition equipment. Moreover, when two or more destination names exist, said mail partition equipment gives delivery sequence information, outputs partition data, codes the partition data inputted by this outputted partition data or said video coding equipment, prints them in said mail, classifies mail into a predetermined accumulation field, and is accumulated based on this printed partition code.

[0013]

[Embodiment of the Invention] The gestalt of operation of this invention is explained with reference to a drawing below at a detail.

[0014] Drawing 1 is the block diagram showing the system configuration of the mail processing system concerning one gestalt of operation of this invention.

[0015] This mail processing system is constituted by partition equipment 1 and video coding equipment 100.

[0016] The supply fetch section 3 which said mail partition equipment 1 has body 1a as shown also in the front view of drawing 2, and performs supply of mail 2, and ejection to this body 1a, The pre code read station 4 installed in the lower stream of a river of the conveyance pass 20 from the supply fetch section 3, The address recognition section 110 equipped with the address recognition section 9 which recognizes the scan section 5 similarly installed in the lower stream of a river of the conveyance pass 20, and address information, The partition code printing section 6 which prints a partition code on mail 2, and the ID code printing section 7 which prints a management ID code on the mail 2 which was located next to this partition code printing section 6, and has not recognized address information, The code read station 8 which reads the code information printed in the ID code printing section 7 and the partition code printing section 6, It has the control section 11 which has the storage section which accumulates code-conversion information and address information, and the partition accumulation section 10 which accumulates mail 2 on a predetermined accumulation field at the radical of control of a control section 11, and is constituted. Moreover, mail partition equipment 1 has the conveyance delay pass 21 with which conveyance of mail 2 is delayed.

[0017] The address information in which said mail 2 contains a destination name is indicated. Moreover, as said mail 2 was shown in drawing 5, the partition code which consists of the delivery sequence code 52, an address display number code 53, and a zip code code 54 by the partition code printing section 6 is printed by the bar code. Moreover, when address information has not been recognized, management ID code 51 as a management number for said every mail 2 is printed by the ID code printing section 7 by the bar code.

[0018] Said supply fetch section 3 is set after the mail 2 of handwriting or a printing letter has been intermingled, and it supplies every one copy of this set mail 2.

[0019] The pre code read station 4 is read before performing address recognition according the code information already printed to the address recognition section 110.

[0020] Said partition accumulation section 10 is accumulated to the mail 2 which passed the code reading section 8 by classifying based on the zip code from the reading result or the video coding equipment 100 in the code read station 8, the delivery sequence code 52 corresponding to the input result of an address, the address display number code 53, and the zip code code 54.

[0021] Said control section 11 controls each part of mail partition equipment 1.

[0022] Said conveyance delay pass 21 delays conveyance of mail 2 which passed the scan section 5. In the case of the method which does not use on-line processing 51, i.e., a management ID code, this delay pass 21 is sufficiently long so that time amount until the coding data from the video coding equipment 100 to the mail 2 which has not been recognized in the address recognition section 9 are obtained can be secured (for example, delay conveyance is carried out for 8 - 12 seconds.).

[0023] Said video coding equipment 100 gives partition data to the mail 2 which has not recognized address information in mail partition equipment 1, is for presenting the partition processing by mail partition equipment 1, and has the image storage distribution apparatus 13 and the coding desk 14.

[0024] Said image storage distribution apparatus 13 has the function as an image information are

recording means to obtain the image information of the mail 2 with the address information which has not been recognized in mail partition equipment 1 from the scan section 5, and to accumulate it. Moreover, said image storage distribution apparatus 13 distributes the image information obtained from the scan section 5 to the predetermined coding desk 14.

[0025] Said coding desk 14 has the function as an information input means to input partition data based on the image information accumulated in the image storage distribution apparatus 13.

[0026] Next, the configuration of the address recognition section 110 is explained with reference to the block diagram of drawing 3.

[0027] The address recognition section 110 has the scan section 5 and the address recognition section 9, and is constituted.

[0028] By scanning the address information on mail 2 optically, and carrying out photo electric conversion, the scan section 5 acquires a pattern signal and outputs this pattern signal.

[0029] Said address recognition section 9 has the address field detecting element 31, the image storage section 32, the binary-ized circuit 33, a selection circuitry 34, the alphabetic character detection **** circuit 35, the normalization circuit 36, the address recognition section 40, and the destination name recognition section 41, and is constituted.

[0030] Here, said address field detecting element 31 specifies and detects an address written field, i.e., the address and a destination name, by the coordinate by using technique, such as the projecting method, among each information which is connected to the scan section 5 and indicated by mail 2. Moreover, the address field detecting element 31 will output the signal which shows an address field to a selection circuitry 34, if an address written field is detected. The extract of this address field makes the address field the field which excluded the line of the bottom when taking the projection, or the leftmost line.

[0031] Said image storage section 32 accumulates the image data of the mail 2 processed by the binary-ized circuit 33 mentioned later scanned in the scan section 5.

[0032] Said binary-ized circuit 33 makes binary the pattern signal outputted from the scan section 5 with a predetermined threshold. Moreover, the binary-ized circuit 33 outputs the signal made binary to a selection circuitry 34.

[0033] Said selection circuitry 34 adopts the signal from the address field detecting element 31 and the binary-ized circuit 33, and outputs only the binary-ized signal of an address field to the alphabetic character detection **** circuit 35 alternatively among the binary-ized signals from the binary-ized circuit 33.

[0034] From the binary-ized signal of the address written field outputted from the selection circuitry 34, for example with a presumed pitch, a single character every, it starts by detecting and said alphabetic character detection **** circuit 35 outputs the signal for every single character for an alphabetic character.

[0035] Said normalization circuit 36 normalizes each graphic size to fixed magnitude from the signal for every single character outputted from the alphabetic character detection **** circuit 35.

[0036] The address recognition section 40 recognizes even the address among address information, has recognition section 38a, such as name-of-a-town character recognition section 37a and an address, macrostomia name recognition section 39a, address editorial department 40a, and address database 40b, and is constituted.

[0037] It connects with name-of-a-town alphabetic character dictionary 37b, and said name-of-a-town character recognition section 37a recognizes a name-of-a-town alphabetic character based on the alphabetic data in this name-of-a-town alphabetic character dictionary 37b. In addition, the alphabetic character kind of the name of a town which exists in jurisdiction of each post office is registered into said name-of-a-town alphabetic character dictionary 37b with JIS code.

[0038] It connects with alphabetic character dictionary, such as address, 38b, and recognition section 38a, such as an address, recognizes address display numbers, such as an address, based on the alphabetic data in alphabetic character dictionary, such as this address, 38b. In addition, the alphabetic character kind of addresses which exist in alphabetic character dictionary 38b in jurisdiction of each post office, such as said address, is registered with JIS code.

[0039] It connects with macrostomia name alphabetic character dictionary 39b, and said macrostomia name recognition section 39a recognizes a macrostomia name based on the alphabetic data in this macrostomia name alphabetic character dictionary 39b. In addition, the alphabetic character kind of the

macrostomia name which exists in jurisdiction of each post office is registered into said macrostomia name alphabetic character dictionary 39b with JIS code.

[0040] It connects with address database 40b, and with reference to address database 40b, from the text from macrostomia name recognition section 39a, name-of-a-town character recognition section 37a, etc., said address editorial department 40a edits right address information, and outputs the result. Moreover, address editorial department 40a has the function as a decision means to judge whether two or more destination names exist in the same address based on the information memorized by address database 40b. As this address database 40b was shown in drawing 4, it is formed by the address, the name or the macrostomia name, and the data of delivery, and the data which associated delivery sequence information to what has destination names, such as two or more names, in the same address are stored.

[0041] Said destination name recognition section 41 recognizes the destination name of the mail 2 which had even the address recognized by the address recognition section 40, and consists of name recognition section 41a and name alphabetic character dictionary 41b.

[0042] Said name recognition section 41a recognizes destination names, such as a name, based on the alphabetic data in name alphabetic character dictionary 41b. In addition, alphabetic character kinds, such as a name which exists in jurisdiction of each post office, are registered into said name alphabetic character dictionary 41b with JIS code.

[0043] In addition, in the address recognition section 9, the data of the address information recognized in said address recognition section 40 and the destination name recognition section 41 when it is judged that two or more destination names exist, and delivery sequence are outputted, and when two or more destination names do not exist, the data of the address information recognized according to said address recognition 40 and delivery sequence are outputted as a recognition result.

[0044] Next, it explains according to the flow chart which shows the actuation in a mail processing system to drawing 6 and drawing 7.

[0045] Drawing 6 is a flow chart which shows actuation of the whole system from supply of the mail 2 in a mail processing system to partition accumulation.

[0046] First, mail 2 is supplied by the supply fetch section 3 (S1). The mail 2 with which supply was performed is conveyed by the pre code read station 4 with the conveyance pass 20, and reading of a code is performed. By this reading, it judges whether there are all of three codes, the delivery sequence code 52, the address display number code 53, and the zip code code 54, (S2).

[0047] In said step S2, when all the codes cannot be found, it is judged by control by (S2;NO) and the control section 11 whether it is finishing [this mail 2 / the processing on the video coding desk 14] (S3).

[0048] When the processing on the video coding desk 14 is not made here, recognition processing of the address information by (S3;NO) and the address recognition section 110 is performed (S4).

[0049] When recognition processing of the address information by the address recognition section 110 is successful, it judges whether the destination name of two or more tickets is in the same address of the address information recognized by address editorial department 40a with reference to (S5;YES) address database 40b (S6).

[0050] When a name is in the same address in the two or more tickets delivery-case, a delivery sequence decision is made by address editorial department 40a according to recognition in the (S6;YES) destination name recognition section 41. (S7). the address information recognized to be the delivery sequence determined by this step S7 -- the partition code printing section 6 -- the delivery sequence codes 52, the address display number codes 53, and all the zip code codes 54 -- or -- among these, one or two are printed (S8). In addition, this printing can print only a required code now using the decision result of step S2.

[0051] The printed delivery sequence code 52, the address display number code 53, and the zip code code 54 are read by the code read station 8, and the partition accumulation section 10 performs predetermined partition accumulation processing based on these (S9). Moreover, also when there are all of three codes, the delivery sequence code 52, the address display number code 53, and the zip code code 54, (S2;YES), processing by S9 is presented based on the reading result in the code read station 8.

[0052] When processing according [mail 2] to the video coding desk 14 is made (S3;YES), processing by S8 is presented.

[0053] When recognition processing of the address information by the address recognition section 110

goes wrong (S5;NO), a control section 11 judges whether it is finishing [management ID code 51 / printing in mail 2] from the reading result of the pre code read station 4 (S10). When it is not printing settled (S10;NO), management ID code 51 is printed in mail by the ID code printing section 7 (S11), and the video coding processing to the target mail 2 is made (S12). When management ID code 51 is printing settled (S10;YES), video coding processing of S12 is made. In addition, images, such as address information on mail 2, are supplied to the coding desk 14 from the image storage distribution apparatus 13, and this video coding processing is performed when an operator inputs data based on this.

[0054] Moreover, at step S6, when there is no destination name of two or more affairs in the same address (S6;NO), code printing processing of S8 is presented. In the case of the above-mentioned coding processing, when it judges whether there are two or more destination names and two or more delivery names are in the same address like said step S6, the data of delivery sequence are inputted. In this case, delivery sequence may be determined based on address database 40b, and a means to store delivery sequence data within video coding equipment 100 may be established independently. Thereby, creation of not only postal district part equipment 1 but the partition data which include delivery sequence in the video coding equipment 100 side is attained.

[0055] Next, recognition processing of the address information by the address recognition section 110 of mail partition equipment 1 is explained.

[0056] Drawing 7 is a flow chart which shows the recognition processing by the address recognition section 110, and corresponds to said step S4 of drawing 6, and S5, S6 and S7.

[0057] According to the address recognition section 110, the image scan of mail 2 is first made by the scan section 5 (S21). The image scanned by this scan section 5 is accumulated as image data in the image storage section 32 while being sent to the address field detecting element 31. Moreover, in the address field detecting element 31, in order to detect address information from the obtained image information, a coordinate detects an address field among address written fields (S22).

[0058] The detection result of the address field detecting element 31 is outputted to a selection circuitry 34. A selection circuitry 34 adopts the signal from the address field detecting element 31 and the binary-ized circuit 33, and outputs only the binary-ized signal of an address field to the alphabetic character detection **** circuit 35 alternatively among the binary-ized signals from the binary-ized circuit 33. In the alphabetic character detection **** circuit 35, from the binary-ized signal of the address written field outputted from the selection circuitry 34, it starts by a presumed pitch detecting an alphabetic character a single character every, for example, and the signal for every single character is outputted (S23).

[0059] If logging of an alphabetic character is performed in the alphabetic character detection **** circuit 35, the normalization circuit 36 will normalize each started graphic size to fixed magnitude (S24).

[0060] This normalized text is outputted to the address recognition section 40, and recognition of the address is performed here. In the address recognition section 40, the name of a town of the address information, an address display number, etc. are first recognized by recognition section 38a, such as name-of-a-town character recognition section 37a and an address, (S25). In addition, when the macrostomia name is included in address information in this case, recognition of a macrostomia name is also performed by macrostomia name recognition section 39a (S26).

[0061] Next, it judges whether the recognition result of the macrostomia name by macrostomia name recognition section 39a and the recognition result of recognition section 38a, such as name-of-a-town character recognition section 37a and an address, can be collated by editing into the right address based on the information memorized by address database 40b in address editorial department 40a (S27). In this case, top priority is given to the recognition result by macrostomia name recognition section 39a, and collating with the recognition result of recognition section 38a, such as name-of-a-town character recognition section 37a and an address, is performed. That is, if a recognition result is outputted to address editorial department 40a from macrostomia name recognition section 39a, a name of a town, an address display number, etc. will be conversely read by address database 40b, and it will consider as an address edit result. Thereby, decline in an incorrect recognition rate can be aimed at.

[0062] When step S27 is possible, it judges whether address editorial department 40a has destination names, such as two or more households, in the same address obtained by address edit processing based on the database of address database 40b (S28).

[0063] when two or more destination names cannot be found, the recognized address information which came out of so far, and the corresponding data of delivery sequence are sent out as a recognition result (S29).

[0064] When two or more destination names are in the same address next, the destination name by the destination name recognition section 41 is recognized. Under the present circumstances, the image data first accumulated in the image storage section 32 is read (S30). And this image data utilizes the information on the address field in the address field detecting element 31, and the information on an address written field as well as the case of recognition of the above-mentioned address, only the information on a destination name is sent to the destination name recognition section 41 through a selection circuitry 34, the alphabetic character detection **** circuit 35, and the normalization circuit 36, and recognition of destination names, such as an identifier, is performed here (S31). That is, since the information which removed the address field from the address written field becomes only the field of a destination name, only the information on a destination name is extracted by the selection circuitry 34 based on this information. The data of delivery sequence which correspond the data of the address information which finally contains the destination name recognized even here, and the delivery sequence of corresponding, with address information with reference to address database 40b by address editorial department 40a are sent out as a recognition result (S32).

[0065] Moreover, when it is not able to collate by S27, video coding processing is made.

[0066] by such recognition processing, as shown in drawing 4, even if the same as the address in "70, Saiwai-ku, Kawasaki-shi", the data of delivery sequence can be determined according to a name (destination name). Moreover, since a destination name is recognized only when there are two or more destination names, there is no need for unnecessary recognition processing, and there is no loam Lycium chinense about the fall of a throughput compared with the conventional recognition processing.

[0067] Since it prints as a code which has recognized this information and was further changed into delivery sequence according to the mail processing system by the gestalt of this operation when destination names, such as two or more apartment names and a recipient name, are in the same address as explained above, a route assembly finer than before can be performed and the load of a help input activity can be reduced.

[0068] Moreover, also when recognition of address information is not completed in the mail partition equipment 1 side, the same processing is attained in inputting an apartment name and a recipient name by the video coding equipment 100 side. When an address display number etc. is inputted, more detailed information (an apartment name, recipient name, etc.) judges whether it is the need, and you may make it control here not to perform an unnecessary information input.

[0069] Moreover, improvement in the rate of reading and input effectiveness can also be aimed at by doing reading and the input of this delivery sequence information by the self-area.

[0070]

[Effect of the Invention] When it judges whether two or more destination names exist in the same address in address recognition equipment according to this invention as explained in full detail above, and it is judged that two or more destination names exist, the delivery sequence information based on the destination name of mail is given, and partition data are outputted. Since the delivery sequence information based on the destination name of mail is given when it is judged by this that two or more destination names exist, a route assembly finer than before can be performed.

[0071] Moreover, in mail partition equipment, since the delivery sequence information based on the destination name of mail is given and partition accumulation of the mail is carried out to a predetermined accumulation field based on this when it is judged that two or more destination names exist, a route assembly finer than before can be performed and partition accumulation can be performed.

[0072] Furthermore, in a mail processing system with mail partition equipment and video coding equipment, when two or more destination names exist within the same address with mail partition equipment, delivery sequence information is given and partition data are outputted, and this partition data is coded further, it prints in mail, and partition of mail and accumulation are performed. Thereby, also when destination names, such as two or more apartment names and a recipient name, are in the same address, a route assembly finer than before can be performed and improvement in mail processing can be aimed at.

[0073] Moreover, since not only a mail partition equipment side but the video coding equipment side

was enabled to give such delivery sequence information, mail can be processed still more efficiently.

[Translation done.]